

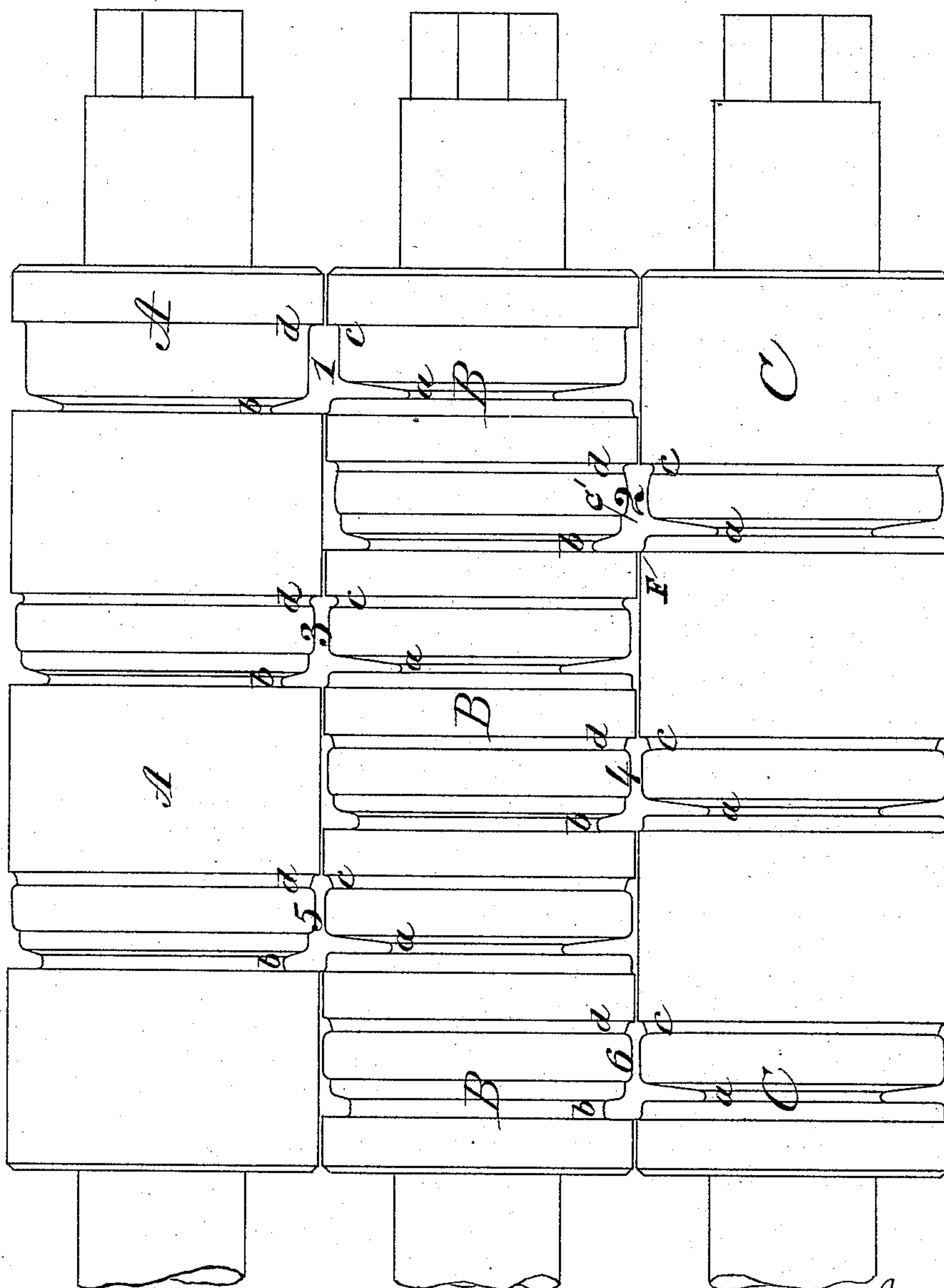
(No Model.)

A. J. MOXHAM.

ROLL FOR ROLLING GIRDER RAILS.

No. 330,997.

Patented Nov. 24, 1885.



Witnesses:  
Leo von Rosenberg  
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# UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF JOHNSTOWN, PENNSYLVANIA.

## ROLLS FOR ROLLING GIRDER-RAILS.

SPECIFICATION forming part of Letters Patent No. 330,997, dated November 24, 1885.

Application filed October 1, 1885. Serial No. 178,717. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR J. MOXHAM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Rolls for Rolling Girder-Rails for Street-Car Tracks, which invention or improvement is fully set forth and illustrated in the following specification and accompanying drawing.

10 The object of this invention is to provide a set of rolls for rolling side-bearing girder-rails having a cross-section substantially of the form indicated by the last finishing-pass illustrated in the accompanying drawing.

15 The invention consists of the rolls having the conformation of passes hereinafter described, and specifically set forth in the claim.

In the accompanying drawing the several parts are indicated by letters as follows: A indicates the top roll of a set of rolls three-high; B, the middle roll, and C the bottom roll. The rolls, however, may be made two-high, if preferred. Said rolls contain six passes, numbered, respectively, from 1 to 6, inclusive, as shown in the drawing. Pass No. 1 is intended to receive a billet rolled to its approximate shape by any known method, or as may be done by the means shown in Patent No. 312,213, issued to me February 10, 1885. The course of rolling such a billet in the rolls is as follows: The hot billet is first run through pass No. 1, then through pass No. 2, then through pass No. 3, and then successively through the remaining passes in regular order, ending with the last pass, No. 6. It will be observed that in passes Nos. 1, 2, and 3 the reduction of metal to form the web proper of the rail when finished, as shown in the last pass, No. 6, is greater in proportion to the work performed on the rest of the metal than it is in any of the succeeding passes. It will also be observed that the reduction of metal at the points *a b* and *c d* in these earlier passes is less in proportion to that on the rest of the rail than it is in the subsequent passes, in consequence of which a sufficient amount of metal is left at the respective points mentioned to compensate for the wire drawing or flow induced at these points by the extra work put upon the web portion of the rail, and still leave enough material to secure the proper elongation at said

four points in the subsequent passes. By this means the rail is delivered free from distortion. It will be further observed that the tendency of the metal to run away from the points *c d*, owing to the wire drawing above mentioned, is checked by allowing ample room for the spread of the metal at these points in the earlier passes.

The change of form effected in pass No. 2 by running the billet therethrough immediately out of pass No. 1 is such that an excessive amount of work is put upon the point *c'* in pass No. 2, said point being one where great flow of metal is not induced from other causes. In these earlier passes the grooves are so shaped that the greater bulk of the spread of metal is toward the end of the rail at *c d* for the purpose of checking the tendency to wire-draw the metal at these points.

For the purpose of "draft" upon the head of the rail at *a b*, the passes are so proportioned that the point marked F, situated at the offset between the head and tram of the proposed section of rail, is made a common or neutral point in the distribution of draft. Such point may or may not be at the parting-lines of the rolls, as may be found advisable, according to the varying nature of the material used, whether iron, soft steel, or hard steel.

It is obvious that changes, slight in character, not affecting the principle of this invention herein described may be made in these rolls; but the rolling can be best effected in the manner shown.

If deemed desirable, these rolls can be used with an additional pass suited to bend up the side tram of the rail after being finished in pass No. 6 into a super-elevated guard for the manufacture of the recently much-used rolled girder curve-rails.

Having thus fully described my said improvement in rolls as of my invention, I claim—

A set of rolls for rolling girder-rails, provided with passes of the respective shapes shown in the accompanying drawing and therein numbered from 1 to 6, inclusive, substantially as described, for the purposes set forth.

A. J. MOXHAM.

Witnesses:

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